REMARKS

Claims 1-16 are pending in the subject application. Claims 1-4, 6, 8, 10, and 11 stand rejected under 35 U.S.C. 103(a); claims 13 and 14 stand rejected under 35 U.S.C. 112, second paragraph; and claims 15 and 16 stand rejected under 35 U.S.C. 101. Claim 12 has been allowed and claims 5, 7, and 9 have been objected to but are otherwise allowable. Claims 13-16 have been amended.

The Applicants appreciate the Examiner's thorough examination of the subject application and respectfully request reconsideration of the subject application based on the above amendments and the following remarks.

35 U.S.C. § 112, SECOND PARAGRPAH REJECTIONS

The Examiner has rejected claims 13 and 14 under 35 USC 112, second paragraph as being indefinite. The Applicants believe that the grounds for rejection are moot in view of the above amendments to the claims.

35 U.S.C. § 101 REJECTIONS

The Examiner has rejected claims 15 and 16 under 35 USC 101 as being directed to non-statutory subject matter. Claims 15 and 16 have been amended. The Applicants believe that the grounds for rejection are moot in view of the above amendments to the claims.

35 U.S.C. § 103(a) REJECTIONS

The Examiner has rejected claims 1, 4, 6, 8, 10, and 11 under 35 USC 103(a) as being unpatentable over U.S Patent Number 6,118,474 to Nayar ("Nayar" or the "Nayar Reference") in view of U.S. Patent Number 5,185, 667 to Zimmermann ("Zimmermann" or the "Zimmermann Reference") further in view of U.S. Patent

Number 6,366,360 to Ejiri, et al. ("Ejiri" or the "Ejiri Reference"); claim 3 under 35 USC 103(a) as being unpatentable over Nayar in view of Zimmermann and Ejiri, further in view of U.S. Patent Number 5,675,380 to Florent, et al.; and claim 2 under 35 USC 103(a) as being unpatentable over Nayar in view of Zimmermann and Ejiri, further in view of admitted prior art. The Applicants respectfully traverse these rejections in view of the above amendments and for reasons detailed below.

The invention as claimed solves the shortcoming of conventional imaging systems having hyperboloidal mirrors that makes it difficult to align a lens on the entire surface of the hyperboloidal mirror at an optimal location. See, e.g., Specification, page 3, line 17 to page 4, line 12. More specifically, the present invention discloses an imaging system that includes a correction section for "correcting distortion in the captured image based on a value regarding a distance between a lens position adapted for the coordinate transformation and a light-receiving surface of the imaging device."

Claims 1, 4, 6, 8, 10, and 11

The Nayar reference discloses an imaging system having a paraboloidal reflector that orthogonally reflects incident light to an image sensor. See, e.g., Nayar, Abstract. The Applicants agree with the Examiner that Nayar:

(1) does not teach mention or suggest "correcting distortion in the captured image based on a value regarding a distance between a lens position adapted for the coordinate transformation and a light-receiving surface of the imaging device" as recited in claim 1; or

(2) does not teach, mention or suggest the method steps of claim 11.

Indeed, Nayar does not discuss the location of the image sensor with respect to the paraboloidal reflector at all. However, the Examiner asserts that, the Zimmerman reference discloses the method steps of claim 1 and, further, that the Ejiri reference discloses distortion correction. The Applicants respectfully disagree.

Zimmermann discloses an imaging system for transforming an image "into a non-distorted, normal perspective image at any orientation, rotation, and magnification within the field-of-view." Zimmermann, col. 1, lines 9-11. Specifically, Zimmermann uses a fish eye lens to provide a limited, i.e., 180-degree, field-of-view image to a digital camera. See, e.g., Id., col. 3, lines 25-30.

However, notwithstanding that Zimmermann does not teach using a reflecting mirror or an imaging section that receives an image from a lens opposite the reflecting mirror, the Examiner maintains that, Zimmermann teaches the method steps of claim 11 and it would have been obvious to combine the teachings of Nayar and Zimmermann to come up with the invention as claimed. However, Nayar expressly teaches away from Zimmermann; hence, one of ordinary skill in the art would not have combined Nayar and Zimmermann to get claim 11. Specifically,

> Since the fish eye lens has a very short focal length, the field of view may be as large as a hemisphere. The use of such lenses in an imaging system is problematic, however, in that they are significantly larger and more complex than conventional lenses. Moreover, it has been difficult to develop a fish eye lens with a fixed viewpoint for all points of the relevant scene. U.S. Pat. No. 5,185,667 to Zimmerman, and U.S. Pat. No. 5,359,363 to Kuban et al. are also directed to the use of fish eye lenses to replace conventional pan and tilt mechanisms, and accordingly suffer from the same disadvantages.

Nayar, col. 1, lines 54-65 (Emphasis added). Thus, it would be improper to combine Nayar with the "problematic" Zimmerman reference.

The Examiner, further, admits that, neither Nayar nor Zimmerman teaches, mentions or suggests "correcting distortion in the captured image based on a value regarding a distance between a lens position adapted for the coordinate transformation and a light-receiving surface of the imaging device" as recited in claim 1. The Ejiri reference purports to disclose methods and systems for correcting distortion aberrations associated with optical units. Ejiri, however, deals with optical units having lenses and does not address hyperboloidal mirrors. According to Ejiri, such correction is "based upon corresponding portions of partially overlapping images" that include at least one common element. Ejiri, col. 1, lines 19-20

(Emphasis added). Specifically, Ejiri teaches determining correction coefficients, i.e., A and B, "based upon a relationship between corresponding pairs of information on a common element in the images, the images being at least partially overlapping to contain the common element." Id., col. 2, lines 45-49 (Emphasis added). More specifically, referring to FIG. 4 and the accompanying disclosure, Ejiri teaches determining correction coefficients by taking two images of an object by changing the angle of the lens but without changing the distance between the lens and the object. See, e.g., Id., col. 4, lines 41-63.

There is nothing in Ejiri that teaches, mentions or suggests correcting distortion "based on a value regarding a distance between a lens position adapted for the coordinate transformation and a light-receiving surface of the imaging device" as recited in claim 1. The distance between the a center of a lens and the image forming surface R described by Ejiri "is set to a known value." Id., col. 8, lines 37-38 (Emphasis added). The "center of the lens" does not physically correspond to the "lens position adapted for the coordinate transformation." Moreover, R, being set to a known value beforehand, does not change.

Therefore, it is respectfully submitted that, claims 1, 4, 6, 8, 10, and 11 are not made obvious by Nayar in view of Zimmermann, further in view of Ejiri and, moreover, satisfy the requirements of 35 U.S.C. 100, et seq., especially § 103(a). As such, the Applicants believe that the claims are allowable. Moreover, it is respectfully submitted that the subject application is in condition for allowance. Early and favorable action is requested.

Claim 3

Nor can the Florent reference make up for the deficiencies of the other three patents. Specifically, the Florent reference does not teach, mention or suggest correcting distortion "based on a value regarding a distance between a lens position adapted for the coordinate transformation and a light-receiving surface of the imaging device".

Therefore, it is respectfully submitted that, claim 3 is not made obvious by Nayar in view of Zimmermann and Ejiri, further in view of Florent and, moreover, satisfies the requirements of 35 U.S.C. § 100, et seq., especially § 103(a). As such, the Applicants believe that claim 3 is allowable. Moreover, it is respectfully submitted that the subject application is in condition for allowance. Early and favorable action is requested.

Claim 2

The deficiencies of the three patents have been discussed above. Therefore, it is respectfully submitted that, claim 2 is not made obvious by Nayar in view of Zimmermann and Ejiri, further in view of admitted prior art and, moreover, satisfies the requirements of 35 U.S.C. § 100, et seq., especially § 103(a). As such, the Applicants believe that claim 2 is allowable. Moreover, it is respectfully submitted that the subject application is in condition for allowance. Early and favorable action is requested.

The Applicants believe that no additional fee is required for consideration of the within Response. However, if for any reason the fee paid is inadequate or credit is owed for any excess fee paid, you are hereby authorized and requested to charge Deposit Account No. **04-1105**.

Respectfully submitted,

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